

STARDUST

Newsletter of the Royal Astronomical Society of Canada
Edmonton Centre



February 2008

Volume 53 Issue 6



Taken February 27, 2005 from the Capilano bridge pedway. Similar conditions will exist this month on Sunday morning of the 24th, but the Moon will be lower. Photo by Alister Ling.

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RASC Edmonton Centre Contact Information

Council Positions			
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Past-president	Orla Aaquist		
Vice-president	Sherry Campbell		
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Treasurer	Mark MacDonald		
Co-National Council Rep	Roy Ramdeen		
Co-National Council Rep	Patrick Earl		
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Fund Raising Coordinator	Franklin Loehde		
Councillor	Bruce McCurdy		
Councillor	Andrew Soon		
Councillor	Sheldon Helbert		
Councillor	Harris Christian		
Councillor	Ross Sinclair		
Internal Communications Officer	Michael Ward		
Observers' Group Director	Paul Campbell		
Membership Secretary	Massimo Torri		
New Member Advisor	Pat Abbott		
Dark Sky Preserve Coordinator	Sherrilyn Jahrig		
Light Pollution Chair	Bruce McCurdy		
Appointed Officers			
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Web Site Coordinator	Howard Gibbins		
Library Coordinator	Roxy Welter		
Equipment Coordinator	Bob Jahrig		

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Stardust Articles for Stardust may be submitted by email to mward@interbaun.com. Submission deadline is the last day of the previous month (e.g. for the May issue submit by 30 Apr). Submit as **MSP Office 2003 or earlier** (NOT MS xml/docx please) or **OpenOffice OR AbiWord OR plain text**. Please avoid use of fancy formatting, odd spacing, and strange fonts. Graphics (photographs, illustrations) should be submitted as separate files, and clearly identified.

Upcoming Events, Meetings, Deadlines, Announcements

Regular Meetings 2008

Telus World of Science, 11211 - 142 St, 7:30pm

Feb 11	Sep 8
Mar 10	Oct 20
Apr 14	Nov 10
May 12	Dec 8
Jun 9	

Council Meetings

ATA Building, 142 St & 111 Ave, 7:15pm

Feb 25	Sep 22
Mar 24	Oct 27
Apr 28	Nov 24
May 26	

Member Donations to Edmonton Centre: Thanks to the following members who each made a donation to the centre in 2007 when they renewed their membership:

Beverly Burns

Sebastian Czan

Paramanand Desai

Dwight Hansen

Roderick Wasylishen

In addition to these generous members, we would also like to thank an (as yet) anonymous member who made a donation through an employer (Telus) sponsored program which was matched by the employer. Thanks, whoever you are, and thanks Telus.

**RASC Edmonton Centre's
Annual Banquet 2008**

For Members and their Guests

April 19, 2008

Faculty Club, University of Alberta

Guest speaker:

Dr. Ian Mann

Department of Physics, University of Alberta

topic:

"The NASA THEMIS Mission: Space Weather,
Aurora, and things that go bump in the night..."

Tickets: \$30.00

Advance tickets will be on sale at the meetings between January and April
or call Howard at 469-9765.

More information available on the Edmonton Centre Website

<http://www.edmontonrasc.com>

President's Report *by Krista Stefan*

Hello shivering astronomers! I hope everyone has managed to keep warm and keep their itching focus fingers occupied.

I would like to welcome the new members of council, Alister Ling as Co-National Council Representative, Richard Vanderberg as Councillor, Murray Paulson as New Member Advisor, Dwight Hansen as Equipment Coordinator, Larry Wood as Scope Rentals Coordinator, Wally Anhorn as Backup Librarian, Fred Marlett as Social Director, and Mike Noble and Terry Nonay as the 2008 Auditors. I would also like to announce the formation of a committee with Orla Aaquist as its chair with a 2 year mandate to organize events for the 2009 International Year of Astronomy. I think a lot of great events are in store for us for IYA.

I was very happy to perform one of the most pleasurable duties as President at last month's Annual General Meeting – presenting the Centre Awards. For those who missed the meeting, here's the list of award recipients (the full citations are available on the website, and see the photos on page 9 of this *Stardust*):

Franklin Loehde Award

For Project of the Year

Black Nugget Lake Observatory

Dave Robinson and Roman Unyk

The Black Nugget Lake Observatory project leading to this award is one where a significant amount of time and effort has gone into the project, but most of this has been behind the scenes. Dave and Roman have put considerable effort into planning and executing this complex multi-year project. This includes putting together one

of the most detailed proposal submissions for Alberta Gaming that I have seen, negotiating the lease with Beaver County, arranging for the preparation of the observing area, the installation of power to the site, the snow removal schedule, and the all important (at least to this observer) yet to be completed toilets. Because of their efforts, by next fall we should have a viable dark site with a secure and heated storage area.

The George Moores Award

For Excellence in Public Education

Bruce McCurdy

Bruce has done much to promote both Astronomy and the RASC to the general public and is frequently (and has been for a number of years) involved in a wide variety of public education activities. The list includes many hours (both scheduled and unscheduled) volunteering at the Observatory deck, frequently acting as a spokesperson to the media for activities and events, writing regular columns, volunteering for numerous outreach activities, helping to develop a new National observing program, taking up the mantle of Light Pollution Committee chair, and most recently expanding to help teach the "The Night Sky – An Introduction" course.

Bryce Heartwell Memorial Award

For Astrophotographer of the Year

Massimo Torri

Massimo is a relatively new member of the Centre, but has jumped into participating in many aspects of the Centre with both feet including starting the astrophotography group, being the driving force behind obtaining astrophotography-related equipment for the Observatory, being a very active member of council, participating in public education and outreach, and generally being willing to take part in on-line and in-person discussions on astronomy and astroimaging. In putting considerable work into researching and experimenting in digital astrophotography and image processing the photos produced have advanced from “nice” to “wow” in an amazingly short period of time. Among the “wow” images are the recent lunar images and the first forays into IR photography.

Observer of the Year
Alister Ling

Alister has always been eager to share observing experiences with the membership, and for a long time had served as our observing group director. He also participates in and encourages others to participate in observing projects with real scientific value including occultation timings and meteor counts as well as unique astrophotography opportunities, recently becoming particularly infamous for his predictions of when and where to capture the Moon in the glory of reflected sunrises and sunsets from Edmonton’s downtown core buildings. As well as observing objects outside the Earth’s atmosphere we have come to rely on

his atmospheric observations and professional weather reports provided at great personal risk...

The President’s Award
For Service to the Centre
Paul Campbell and Sherry Campbell

When the Nominating Committee was looking at who to present with the President’s Award for Service to the Centre, we wanted to consider someone who has contributed in a significant way to multiple aspects of the Centre. Both Paul and Sherry have been very actively involved in many aspects of the Centre including observing, public education, numerous committees and council as well as providing support for others within the Centre and particularly providing support for each other. So, in recognition that either Sherry or Paul could handily qualify for this award individually but working together they are definitely a force to be reckoned with the President’s Award for Service to the Centre goes to Sherry and Paul Campbell.

The Angus Smith Award
For Excellence in Telescope Design and Construction
Not awarded in 2007

I’m sad to say that there were no nominations for this award again this year.

Observers Report by Paul Campbell

Wow! It’s been cold and cloudy, and as I write this I’ve just gone through some 14 days of continuous work. Therefore I personally have not done a lot of astronomy. Fortunately others have and if you read the Astro list you’ll know that some have been doing astronomy from some exotic places.

Luca Vanzella managed to observed the Jupiter/Venus conjunction from Hawaii, as he writes:

I can report a successful observation of the Venus Jupiter conjunction this morning at 6:20 HST (dark sky) and 6:45 HST (deep twilight), from our lanai (balcony) in Lihue, Kauai. Quite a nice sight at 25X and with the waning last quarter moon hanging above and to the right, the naked eye scene, above the huge banyan tree on the grounds, was lovely.

Janni Cervel wrote this from southern India: *Orion is laying on its side. M79 is about 40 degrees alt.*

And Bob Drew on a cruise through the Panama Canal also reported that Orion was on its side while almost at the zenith.

Also, there was a beautiful aurora on the plane coming back home. In all cases the people reported the local temperature back to us. I chose to edit that out as I don’t want to discourage the readers left here in Edmonton enduring –30 degree weather.

With not a lot to report I opened up my observers handbook thinking that I could report on upcoming events from the time of the meeting till mid March. The first thing I notice is that Neptune will be in conjunction with the Sun. Sigh! I don’t think anyone will be able to record that event.

The big event occurs on the night of February 20th, 2008 as we will be able to see a total eclipse of the moon. For us in Edmonton we will not be able to see the moon enter it’s penumbral phase as that occurs when the moon is below the horizon. For everything else we should be able to see it. Here are the times of this event as listed from Guide 8.0:

	Time	Altitude	Azimuth
Moon enters Penumbra	17:35	-1.5 degrees	70.2 degrees (Not visible)
Moon enter Umbra	18:42	7.2 degrees	83.2 degrees
Totality begins	19:58	18.4 degrees	98.5 degrees
Totality Ends	20:53	25.8 degrees	110.0 degrees
Moon leaves Umbra	22:10	35.3 degrees	128.5 degrees
Moon leaves Penumbra	23:16	41.5 degrees	147.5 degrees

As you can see the eclipse will be rather low and towards the east. If we are to have any success observing this at the observatory we will probably need other scopes out in the field to help out. I would like to invite everyone to the observatory for this event. If you choose to observe this from some other place please

ensure you have a reasonable eastern horizon.

Finally I would like to comment on the weather prospects for this event. I am probably the worst weatherman alive as everything I predict is wrong. Therefore I am predicting very cold and cloudy on February 20th.

Beating the Seeing – Part 5 by Massimo Torri

Introduction

This is the fifth article of a series devoted to Lunar and

Planetary astrophotography using Lucky Imaging. The previous articles were published in the October, November, December 2007

and January 2008 issues (see <http://www.edmontonrasc.com/stardustbackissues.html>).

An imaging session using Lucky Imaging consists of several steps:

1. Planning
2. Setting up telescope, computer and camera
3. Focusing
4. Acquiring images
5. Processing

In this article we will complete the discussion around Setting up telescope, computer and camera discussion and then will address focusing.

Focal Length Requirements

In my last article (<http://www.edmontonrasc.com/download/stardust200801.pdf>), I stated that: "In the case of planetary imaging you definitely need long focal lengths, at least 5000mm". While it is true that long focal lengths are required to capture fine details, the previous statement is rather crude and needs to be clarified.

A signal is loosely defined as a quantity that varies in time and/or space. An image (see Fig.1) is a type of signal.



Fig. 1: Mars in infrared

Individual images are static signals, in the sense that they do not vary in time. However, image brightness varies in space. For example, the image in Fig.1 shows different level of brightness according to the position we pick: outside of the planet's disk brightness is close to zero (dark), whereas inside the planet disk it varies from light gray to dark gray, depending on the presence of features on the surface of the planet. The signal hitting the camera sensor is a continuous signal: we can subdivide the cross section of the beam of light coming from the planet in as many parts as we want and each part will have a specific brightness. On the other hand, the image generated by the camera sensor is not continuous, but discrete since the sensor cannot be divided up in regions smaller than a single pixel. In other words, the signal hitting the camera sensor is sampled (measured) by the sensor itself at locations corresponding to pixel locations. If the magnification was too low, then the disk of the planet would appear too small on the camera sensor and it would cover only few pixels. In that case sampling would be too coarse; most of the details would be lost and the image of the planet would appear as a featureless blob. The parameter that controls the magnification when using a camera at prime focus (like a webcam inserted in the eyepiece holder) is the focal length of the telescope. So the question is: what is the shortest focal length required to ensure that the planet is imaged with the highest possible level of detail (as permitted by

aperture and seeing conditions)?

The answer to the previous question is provided by the Nyquist Theorem, a fundamental result of Signal Processing Theory. Adapting the Nyquist Theorem to our special case (planetary image), we can conclude that a signal is sampled with enough detail if the smallest detail covers at least two pixels on the camera sensor. So if Δl is the size of the smallest detail allowed by the telescope aperture and μ is the pixel size (both measured in microns), then:

$$\Delta l / \mu > 2 \quad (1)$$

According to Diffraction Theory, Δl can be approximated by the following expression:

$$\Delta l = \lambda F / D \quad (2)$$

Where λ is the wavelength used to image the planet, F the focal length of the telescope and D its aperture. Inserting (2) in (1) and resolving for F we get the following expression:

$$F > 2D \mu / \lambda \quad (3)$$

In the case of a Philips Vesta webcam ($\mu = 5.6$ microns) coupled to a 8in telescope ($D = 203\text{mm}$) using green light ($\lambda = 0.55$ microns), $F > 4130\text{mm}$. Anything shorter than 4000mm and your images will not be able to reveal all the details that are present in the original signal (light coming from the planet hitting the camera sensor). Using focal lengths above the Nyquist threshold is referred to as oversampling. Let's keep in mind that the Nyquist threshold is derived assuming ideal conditions. Reality, as usual, makes things more complicated and there is empirical evidence that the Nyquist threshold should be increased by at least 50% [1]. As a consequence of that, you want to setup your telescope and camera in such a way that images are always oversampled. In my case, for example, for planetary images I always use a PowerMate 5X in conjunction with my 8in Newtonian f/5. That provides an optical system with a 5000mm focal length, which is above the threshold for green light (the threshold is lower at longer wavelengths like red or infrared).

Focusing

Last time we concluded our discussion after placing the target of our imaging session (planet or Lunar feature) in the centre of the camera field of view. Live images of the target are displayed on the computer screen by the camera software. As you remember, I advised to increase the camera gain to 100% to be sure that the target would be detectable even when grossly out of focus (that's hardly the case with the Moon, but it is routine with planets). The next step is to bring the target in focus, which is done in two steps. The first step consists of bringing the target roughly into focus. To do that, start by racking the focuser in one direction. If the target becomes smaller and brighter then keep racking the focuser in the same direction. If not, reverse the direction. When the target becomes reasonably sharp, reduce the gain to remove overexposure. Now it's time to move to the second step, which consists of bringing the target into perfect focus. Achieving perfect focus is quite challenging when using a webcam or a firewire camera. Because of the high magnifications involved, the effects of seeing are enhanced. The result is an unsteady, waving target alternating crisper images to blurry ones which makes very difficult to assess whether the target is really into focus or not. The problem is compounded with the noise intrinsic to the camera sensor that blurs images displayed on the computer screen even further (this is particularly true for webcams, less so for firewire cameras). One way to minimize noise in the live images displayed on the computer screen is to set the number of frames per second

(fps) to the lowest value allowed by the camera software (your camera software should have a slider or a set of buttons that controls the number of frames per second). The higher the fps setting, the more compression is used by the camera firmware to stream single frames to the computer which results in poorer quality images. It is recommended that you do not use more than 15 fps with webcams. I personally never exceed 10fps and I almost always image at 5fps. Firewire cameras with their low noise sensor allow for acceptable images at much higher fps settings, like 30 or even 60. In addition to lower the fps setting, you should also keep the gain as low as possible. I usually reduce the gain until the target turns out slightly underexposed. Keep also in mind that if you are focusing manually then you will be standing by the telescope to be able to reach the focuser with one hand while watching the result of your action on the computer screen. In this situation it is likely that the screen is positioned 3 or 4 feet away from your eyes, making harder to judge when perfect focus is achieved. Operating on the focuser manually is a very delicate operation: the slightest touch on the focuser knob will introduce vibrations in the telescope which will make the image of the target displayed on the computer screen “dancing around”. There is no doubt that a motorized focuser is the solution to this problem. On the other hand, with a little bit of perseverance and experience you can achieve good results even without a motorized focuser (I don't have one). There are two sets of techniques to achieve perfect focus: direct and indirect. Direct techniques are applied directly on the target. The simplest example of direct technique is to rack the focuser manually and check the result on the computer screen where the target is displayed. Indirect techniques consist of achieving focus on a different object (typically a bright star) and then slew the telescope (now into focus) to the target.

Direct Techniques

Moon

Unless it is Full Moon, look near the terminator for mountain tops that are illuminated by sunlight. Mountain tops appear as star-like features on the dark background beyond the terminator. Once you have identified one, rack the focuser until it appears as tight and bright as possible. At that point your telescope is practically into perfect focus, so using your hand controller nudge the scope

References

For a high-resolution, colour version of this article, see: <http://www.edmontonrasc.com/download/stardust200802.pdf>
[1] <http://flickr.com/photos/jmzawodny/2228659421/in/photostream/>

Casino Report by Franklin Loehde, Chair, Fund Raising

1. January 3rd and 4th 2008 Casino

Over 42 volunteers! Thank you all, especially those that did **double-time** or **took time off their regular work**. Also, thanks to Telus World of Science Edmonton employees and volunteers who helped and Dr. Katherine Captain from the U of A Physics Department. Their cooperation with us and support for our programs is appreciated very much.

2. Gaming Commission Talking Points: We are NOT spending our casino money fast enough!

The province of Alberta's Gaming Commission requires that charitable organizations, like us, are required to spend monies earned from casinos within two years from the date of the last casino. While we accumulated a considerable sum of money, the projects we envisioned were complex and required further study before initiating.

to the target feature. If the Moon is full, then try to get the limb as sharp as possible.

Mercury and Venus

These two planets appear featureless at any magnifications when displayed live on the computer screen, unless you use an UV filter on Venus. The only way to tell if your telescope is into perfect focus is to make sure that the limb of the planet is sharp (or as sharp and possible). Because of their proximity to the Sun (particularly true in the case of Mercury) it is best to image the two innermost planets before sunrise, when seeing is best. If you try right after sunset when seeing is very bad up to several degrees away from the Sun you'll be up to quite a challenge!.

Mars

Mars on the other hand has plenty of features to show. The problem is that it is a small planet and only during favourable oppositions it can grow larger than 20". In general it is smaller than that. For example, during last month opposition Mars didn't even reach 16". Because of its small size, Mars require high or very high magnifications. Seeing is the biggest enemy. One trick I find useful is to increase the brightness (not the gain!) of the images displayed by the camera on the computer screen. When the brightness is sufficiently high, you will detect a faint ring around the planet disk. Rack your focuser until the ring becomes the narrowest possible. Then reduce the brightness to acceptable levels. At that point Mars should be into focus.

Jupiter and Saturn

The two gas giants are quite large (about 45") and feature rich (Jupiter more than Saturn). In addition, both Jupiter and Saturn have big moons easily detectable even by a webcam, as long as the gain is sufficiently high. The trick is to use the moons as if they were stars and play with the focuser until they appear the smallest and brightest. Keep in mind that to allow the camera to see the moons you will have to overexpose the planet. That's OK, just remember to reduce the gain after reaching good focus on the moons. In the case of Saturn, you can also use the Cassini division as an indicator of how good your focus is: make sure that the division is visible (ideally) all around the rings. This technique works best when the tilt of the rings is very pronounced.

Next month we'll talk about indirect techniques.

We had asked the Gaming Commission two years ago and received permission from them to retain our casino money from earlier ones to conduct feasibility studies on:

- Black Nugget Lake Observatory
- Queen Elizabeth Planetarium
- Northern Prairie StarFest

With regards to the BNLO, phase 1 has been approved, acted upon, and paid for from casino funds. Future expenditures for the dark site is dependent on its viability to members. To that end the recent success of the 2007 Northern Prairie StarFest helped immensely but there were no major expenditures for involved.

The Heritage site, the Queen Elizabeth Planetarium, is **not** currently available, as an extreme storage problem by the TWOS prevents the RASC using it at this time for a headquarters, outreach centre etc. This could change with their projected expansion.

Most, but not all, previous casino money approvals have been

acted upon so money is still in our account. An example is the future expenditure that involves purchasing, for \$10,000, copies of the book "Meteorites of Alberta" published by the U of A Press to and to be distributed all across Canada. Another important one is the trial project involving Alberta students using a remotely-accessed telescope in the Canary Islands. Its success would have implications for the BNLO and a possible large telescope placed there and being operated by our members while still in Edmonton.

An exciting possibility exists.

The recent January 3rd & 4th casino is likely to add nearly another \$70,000 to our casino account. Because of our inability to spend our casino monies promptly, as required by the Gaming Commission, I am recommending an extended "stay of execution" application to Gaming from us so that other possible projects can be considered.

The Planets by Murray Paulson

Last month we watched a fine **Mercury** appulse, the fading of one superb comet and Mars on its way out. A mighty fine way to start off the new year! The weather was not all that cooperative, but what I got was quite enjoyable. I have a few reports of Mercury early in January, and it was visible till somewhat near the latter part of the month. The month of February will see Mercury head through inferior conjunction with the sun on the 6th of February on its way to the morning Greatest Western elongation on March 3rd. Crazy planet! It moves with such great speed! Note that Mercury and Venus will be flying in formation over the two week period of February 23 to March 8th when they will be closer than 3 degrees apart. The morning sky at this time of year has the ecliptic tipped down close to the horizon, so this will be a tough search in binoculars in the half hour before sunrise, but it would be great to catch Mercury and Venus in the same field of view. They will be closer than 1.3 degrees on the morning of their conjunction, February 26th, and they will be fairly close together for the week surrounding this date. Mercury will be 3 to 4 magnitudes fainter than Venus and passes above it. This will make a good telescopic view in a medium power eyepiece.

Venus on the other hand is gracefully descending the morning sky and over the month of February, will climb out of the bottom of the ecliptic, (Sagittarius) and start climbing back up the morning sky. At the beginning of this month, Venus is a fat gibbous 12.28" gibbous disk in the eyepiece, and shines at Magnitude -3.9. Over the month it will shrink slightly to 11.0" but still shines at magnitude -3.9. As mentioned earlier, Venus will be a challenge from here on in.

Mars is now on his way out and sits in the horns of the bull. Mars swung through the western end of its retrograde motion at the end of January, and now is headed back toward Gemini. This will be the highest that you see Mars in the sky for the next 15 years. At the beginning of February, Mars shows a 11.52" disk in the eyepiece and shines at magnitude -0.4. By early next month, Mars will shrink to 8.25" and will shine at magnitude 0.3. During

February we get another chance to see Mars and the moon pass in the night. It happens on the night of February 15 - 16 at 01:06am local time. The moon passes just 38 minutes of arc above Mars. A subtle detail is that if you examine Mars in the eyepiece, you will discover that both it and the moon are gibbous.

Jupiter is poorly placed from our latitude, and resides in Sagittarius near the Teapot over this month. It is a morning object, and its opposition is still quite a few months off. It shines at magnitude -2.4 and will show you a 39" disk in the eyepiece.

I have been out shooting **Comet Holmes** in the late evening, and have seen Saturn in the east lying in the constellation of Leo. This month Saturn arrives at opposition on February 24th, and becomes an early evening object. At the beginning of the month, **Saturn** rises at 7:00 pm, and will show you a 19.9", magnitude 0.3 disk in the eyepiece. Despite the fact that it rises at 7:00 pm, it will take until 10 pm for it to get to a decent observing altitude of 25 degrees. By the end of the month, Saturn is about this altitude by 8 pm, and crosses the meridian just after midnight. At this time it will sit at an altitude of 48 degrees above the southern horizon. It will be great to have it well placed for observing again. If you were watching it last month, you may have noticed that the rings appear to have tipped up. This is due to the relative placement of earth and Saturn as they move in their orbits. We will continue to see the ring plane appear to tip up over the next few months. Another thing you can watch for is the change of shadow of the planet on the rings as we go through opposition. It takes some reasonable high magnification, but it is interesting to watch the perspective change as the earth moves through the opposition point. Note this year how high **Titan** passes in its orbit above Saturn. It is quite a bit lower than last year. On the night of February 20-21, you can watch a full moon pass 3 degrees under Saturn. Closest approach is in the morning hours at 1:30 am, It will make a nice conjunction, but it will make it hard to get up the next morning.

Blotting Out Starlight: Upcoming Edmonton Occultations: prime events by Alister Ling

Remember that you don't need fancy equipment to join in the joy of shadow stalking. As far as I know, I was the only person on Earth to see the 583 Klotilde event last month, and visual timings from you could have revealed some of its shape, since this was also a first ever of this asteroid.

We are down to a total of 20 "potentially reasonable" asteroid events left this year (within 100 km of Edmonton) with only one event in the April-June window! Additional good news is the

Klotilde event was not on this list – it fell just below the cutoff. Rest assured that when there is a decent event crossing our backyards, I'll send out reminders on the astro list. Remember that because orbits get updated, events formerly too far can get shifted over us with only a couple weeks notice.

The best asteroid occultation events for the upcoming month are:

Local Time	Star	Star Mag	Alt	Asteroid	Diam
2008-03-05 22:30 MST	TYO 2419-00278-1	10.5	52	227 Philosophia	87
2008-03-08 21:50 MST	TYO 1326-00807-1	9.8	49	6255 Kuma	23

There are other asteroid occultations but these are either low probability, or you'll have to travel 50km to attempt it. Please

contact myself, Paul Campbell, or Mike Hoskinson if you're interested in any asteroid event! Even if you don't want to time it,

it's fun simply to watch.

In any month, there are several dozen lunar occultations, and a handful are of interest if you are at the deck. An abridged list

(bright and easy and before 1 am) for events through March can be found at:

http://www3.telus.net/public/aling/total_occultations/Edmonton%20Total%20Occultations.html

Good observing!

Crescents and Full Moon Photo-Ops by Alister Ling

By the time you read this, your chance for a personal record to see a 21h 28m old crescent will have come and gone – did you see it?! We have an even greater record-smasher coming up in early May.

We're now at the start of the best season for crescent Moons full of earth shine and alignments of the setting or rising Moon adorned by the reflection of sunlight off of buildings. We start off with a lovely unaided eye event Feb 20th at 17:47 with the full Moon rising barely after sunset, just to the right of the Telus tower

from Valleyview Drive. Once the Moon gets out of the horizon muck it will be too bright to capture the foreground at the same exposure, but the eye sees it beautifully. Total eclipse to follow!

Skipping slightly to 4 morning events in a row at 07:45am, the waning Moon is nicely placed over the city skyline before setting as the downtown buildings are flooded in sunlight. However, each morning you need to be in a different place to see it best!

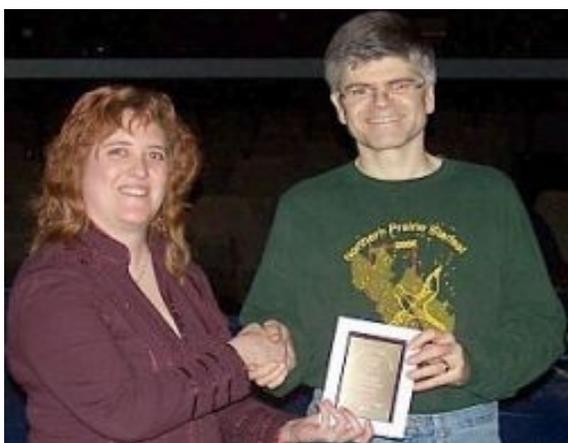
yyyy/mm/dd/hh:mn:s	Sol Az	Alt	Lunar Az	Alt	Age	Elong	Illum %
2008 02 22 07 46 30	107.9°	0.3°	270.3°	1.3°	98-	162.3°:	
From Cloverdale Hill bench, this is right over the Legislature building!							
2008 02 23 07 44 17	107.3°	0.3°	258.0°	2.8°	94-	150.6°:	
From the McNally High School viewpoint, the Moon sets into the downtown core with the Manulife and Commerce Place buildings lighting up!							
2008 02 24 07 42 04	106.6°	0.3°	246.0°	4.1°	88-	139.2°:	
From the Capilano bridge pedway, this is a repeat of my photo from 2005, except the Moon is lower still							
2008 02 25 07 39 49	106.0°	0.3°	234.3°	5.3°	81-	128.0°:	
From the Ada boulevard - 75th St lookout, the Moon slants from above the Telus Tower down into Scotia Bank!							
2008 03 08 19 11 14	272.7°	-7.5°	266.5°	9.0°	3+	17.5°:	
This is one of my classic shots from Strathearn, an earthshine filled crescent just to right of Leg, though a bit on the high side. However, it proceeds to set into the Bell Tower just after 8pm, so a time lapse should be nice.							



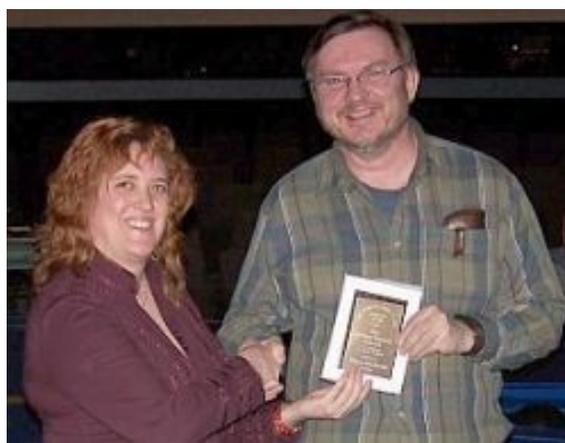
A real image from March 18, 1999 : similar conditions will recur on the evening of March 8th as seen from Strathearn crescent.



*The President's Award For Service to the Centre, **Sherry and Paul Campbell***



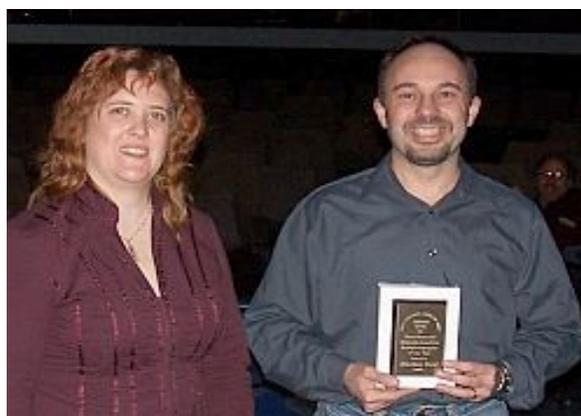
*Observer of the Year
Alister Ling*



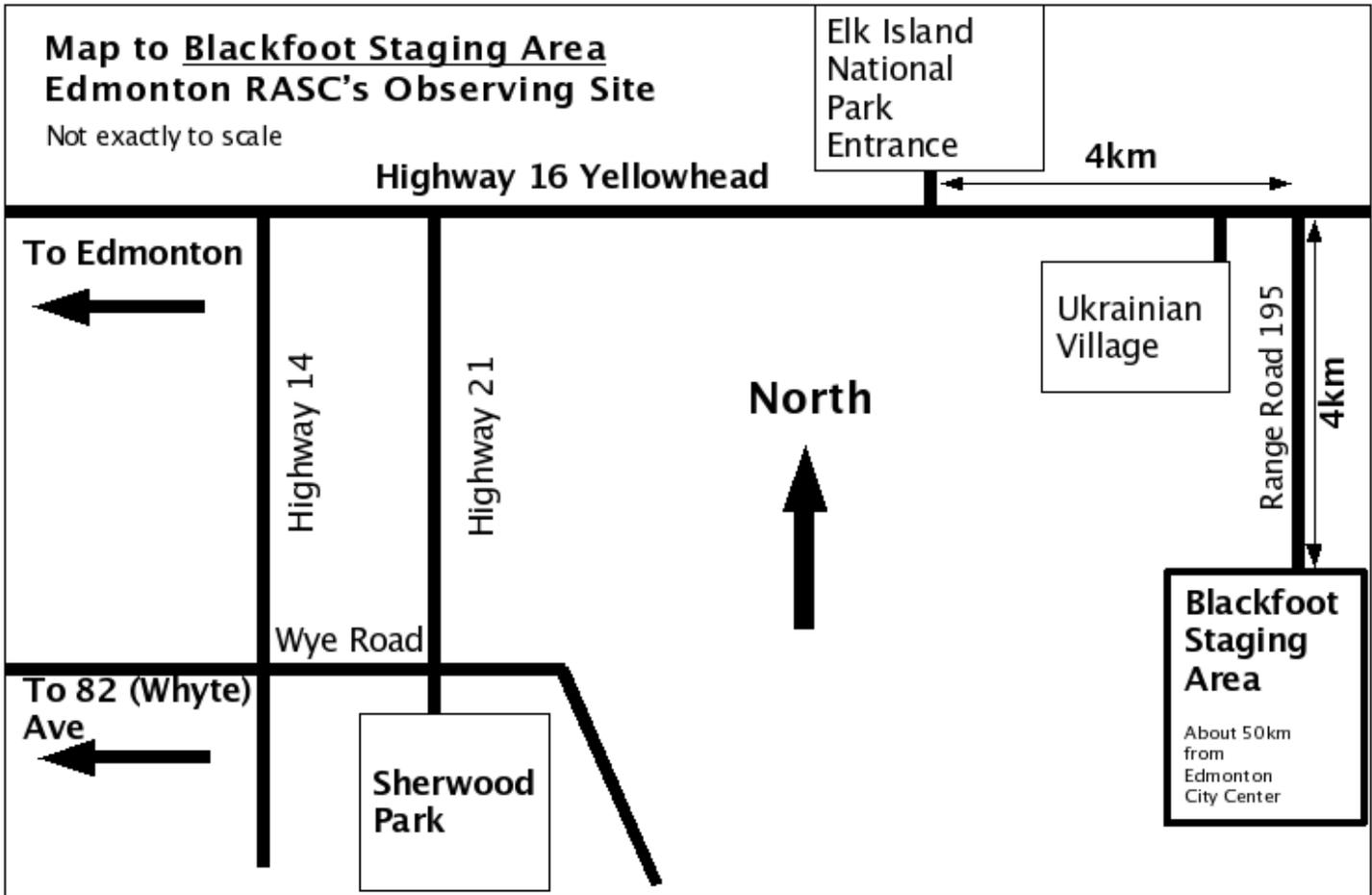
*The George Moores Award, Excellence in Public
Education, **Bruce McCurdy***



*Franklin Loehde Award, Project of the Year
Black Nugget Lake Observatory
Dave Robinson and Roman Unyk (absent)*



*Bryce Heartwell Memorial Award
Astrophotographer of the Year
Massimo Torri*



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